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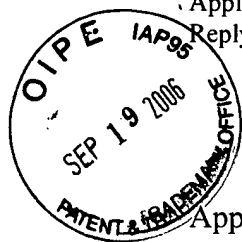
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<b>TRANSMITTAL FORM</b> <i>(to be used for all correspondence after initial filing)</i>		<b>Application Number</b>	<b>09/965,162</b>
		<b>Filing Date</b>	<b>September 27, 2001</b>
		<b>First Named Inventor</b>	<b>Steve E. Hoffman</b>
		<b>Group Art Unit</b>	<b>3724</b>
		<b>Examiner Name</b>	<b>Alie, Ghassen</b>
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**BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Applicant: **Steve E. Hoffman**  
Serial No.: **09/965,162**  
Filing Date: **September 27, 2001**  
Title: **IMPROVED SAW BLADE**  
Group Art Unit: **3724**  
Examiner: **Alie, Ghassen**  
Attorney Docket No.: **9436-9US1 (147359)**

**REPLY BRIEF**

**Mail Stop: Appeal Brief - Patents**

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

This Reply Brief is being submitted in response to the Answer filed by the Examiner on July 24, 2006 in the above-identified application. This Reply Brief is being submitted within two months of the filing date of the Answer and, thus, is timely filed. 37 CFR 41.41(a)(1).

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*James M. McArley*  
*September 15, 2006*

## **1. STATUS OF CLAIMS**

The Status of the Claims is set forth in the Appeal Brief. For compliance with MPEP 1208(I), it is repeated herein.

Claims 1-6 and 13-19 are currently pending in this application. Claims 7-12 were cancelled pursuant to a restriction requirement and are no longer pending in this application. Claims 1-6 and 13-31 were rejected in a non-final office action mailed from the United States Patent and Trademark Office on April 20, 2005. Claims 20-31 were canceled by an amendment filed on July 20, 2005. A final rejection was mailed on August 18, 2005.

Independent claim 1 and its dependent claims 2-6, independent claim 13 and its dependent claims 14-18, and independent claim 19, as presented, have been twice rejected. The appeal is from the rejection of claims 1-6 and 13-19. Appendix A to the Appeal Brief includes claims 1-6 and 13-19 as rejected.

## **2. ISSUED RAISED IN EXAMINER'S ANSWER**

- A. The Examiner's Answer Includes Rejections Of Canceled Claims And, Thus, Presents Issues Not Properly Before The Board.
- B. The Examiner's Answer Fails To Take Into Account Evidence Of Record Establishing Structural Differences In Product Produced By Process And Arguments Presented By The Appellant In The Appeal Brief.

### **3. ARGUMENT**

#### **A. The Examiner's Answer Includes Rejections Of Canceled Claims And, Thus, Presents Issues Not Properly Before The Board**

The Examiner's Answer reiterates the rejections from the Office Action issued on April 20, 2005. That Office Action, and thus those rejections, were directed to claims 1-6 and 13-31. However, in an Amendment filed concurrently with the Notice of Appeal Brief on July 12, 2005, claims 20-31 were canceled from the application to reduce the issues on appeal.

On August 18, 2005, a final Office Action was issued by the Examiner acknowledging entry of the July 12, 2005 Amendment, and listing the pending claims as 1-6 and 13-19.

As such, Appellant's Appeal Brief was directed to only pending claims 1-6, and 13-19.

The Examiner's Answer is improper to the extent it presents issues directed toward canceled claims 20-31. Since the rejected claims are not properly before the Board, Appellant will not address the issues raised by the Examiner as to those claims. (The inclusion of rejections in the Examiner's Answer of the cancelled claims suggests that the arguments in Appellant's Appeal Brief were not considered closely by the Examiner.)

#### **B. The Examiner's Answer Fails To Take Into Account Evidence Of Record Establishing Structural Differences In Product Produced By Process And Arguments Presented By The Appellant In The Appeal Brief**

As discussed above, the Examiner's Answer reiterates the rejections set forth in the April 20, 2005 Office Action. The rejections set forth in that Office Action, as well as those in the Examiner's Answer do not even acknowledge, much less address the evidence submitted by Appellant to establish a critical flaw in the rejections, namely that the process limitations described in the claims result in a structurally distinct product that is not disclosed nor results from the prior art references.

The Appeal Brief includes several Declarations in the Appendix that provide factual evidence directed specifically to the rejections presented by the Examiner. That evidence was not acknowledged, much less indicated as considered in the Examiner's Answer. The law

requires that the Examiner consider such evidence when it is made of record. Appellant submits that this evidence provides further proof that the rejections presented by the Examiner are not proper and should be reversed.

**Examiner's Arguments Regarding Rejection Based On Vankov**

The Examiner's Answer sets out several arguments as to why the rejection based on Vankov is still proper. However, it is submitted that none of those arguments establish anticipation nor obviousness of the claims.

First, the Examiner takes the position that the surface polishing in Vankov "would inherently result in a reduced residual tensile stress" and to support this assertion cites to page 10, lines 2-4 of the specification of the instant application. [See, Answer page 10.]

The initial error with this position is that the Examiner is using the teaching provided by the present application as his basis for deciding what is "inherent" in Vankov. This is completely improper. Furthermore, the section of the application that the Examiner cites actually describes the result that occurs when a product is manufactured using the process recited in the claims, i.e., the claimed invention. That section of the application does not describe what would be inherent in any product that has a precision finish, only products made using the claimed process.

Hence, the Examiner's reliance on the Appellant's application for support of the Examiner's inherency argument is improper and does not support of the rejection based on Vankov.

The next argument presented by the Examiner on page 10 of the Answer starts out by noting that Vankov teaches a blade that has a high precision surface finish which is less than 10 Ra made by an electropolishing process. The Examiner then asserts that "[e]lectropolishing inherently reduces the surface roughness, friction, and impurity of the blade, improves resistance to corrosion, and removes H<sub>2</sub> hydrogen from the blade." The Examiner goes on to assert that a roughened blade is "inherently more embrittle" and that "[e]lectropolishing removes the roughened edges of the blade surface and removes the hydrogen from the blade, which is made of a steel alloy, and consequently reduces the embrittlement of the blade." Hence, the Examiner's argument can be summarized as: a roughened blade is inherently brittle, electropolishing removes roughened edges, thus electropolishing reduces embrittlement.

The Examiner does not cite to one piece of factual evidence to support this multi-step leap to the conclusion that electropolishing reduces embrittlement in the metal blade of Vankov. At the same time, the Examiner does not even address the factual information and data testing provided in the Appeal Brief (which was also previously presented, and likewise ignored, during prosecution of the present application.) As set forth in the Appeal Brief, testing was performed to compare the claimed processing versus the electropolishing process. The test results proved beyond doubt that the product that results from the claimed process is structurally different from a product made using electropolishing. See, Appeal Brief, pages 8-12. Thus, it is a different product. The Examiner does not address any of this in the Answer, instead he merely asserts that Appellant's arguments were not persuasive.

It is respectfully submitted that the evidence of record clearly undermines the Examiner's unsupported position related to the electropolishing process and product described in Vankov.

While it is correct that *In re Thorpe* holds that if a product in a product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable. However, as described in the Appeal Brief, a rejection based on a prior product that appears identical simply shifts the burden to the applicant to establish that the process results in a structurally different product from the prior art. The evidence presented in the Appeal Brief does just that, it proves that structurally, under the surface, the product is different. Hence, it is a different product. The Examiner's Answer does not even try to address this. The failure to take into account this evidence when assessing patentability was an error.

As discussed in the Appeal Brief, a polishing operation does not inherently result in reduction in embrittlement. Polishing has been known for years to smooth the surface of a product and reduce the Ra. A skilled person in the field of polishing understands that. Polishing does not, however, result in reduction in embrittleness. It was well known at the time that reduction in embrittleness could only be achieved through heating and cooling of the material or through a pounding of the metal by shot peening. Thus, the Examiner's "inherency" leap in a electropolishing process is completely contrary to what was understood at the time.

It is respectfully submitted that the Appellant has established that the product is different, thereby overcoming the rejection. Since the Examiner has not addressed the evidence presented in the Appeal Brief that counters the rejection, it is submitted that the Examiner's Answer fails to

present a proper rejection based on Vankov. Accordingly, reversal of the rejections based on Vankov is respectfully requested.

### **Examiner's Arguments Regarding Rejection Based On Williams**

The next argument advanced in the Examiner's Answer is that Appellant's arguments regarding Williams are not persuasive. As an initial matter, the Examiner starts off by incorrectly stating that "appellant acknowledges that Williams finishing process reduces residual stress." [Examiner's Answer, page 12.] Appellant has made no such acknowledgement. On the contrary, Appellant has stated repeatedly in the Appeal Brief that the grinding operation disclosed in Williams would inherently introduce residual tensile stress into the product. There is nothing in Williams to suggest otherwise. Williams simply discloses the preferred material of the blank, the final surface roughness and that the side of the blank is ground. Nothing else.

The arguments presented by the Examiner regarding what occurs by the processing and any reduction in residual strength does not come from Williams, but is a guess made by the Examiner in an attempt to fill a key deficiency in Williams. But the guess is an incorrect one. As noted in the Appeal Brief, it is well known in the industry that a grinding process introduces tensile stresses into a product. This is completely contrary to the intent of the present invention and what is recited in the claims under rejection, i.e., a product with reduced residual tensile stress.

The Examiner correctly notes that the claims do not set forth a specific decrease in residual tensile stress. However, it is Appellant's position that the claims and the law do not require that. All that is required is that the process limitations in the claim result in a product that is structurally different from a product that is not manufactured in accordance with the process. That is what is claimed and what the evidence has established occurs.

In summary, Williams increases tensile stress in the product, not decreases. Thus, Williams fails to anticipate the claims and, since it teaches away from the resulting product, would not render obvious the claims of the present invention. The Examiner's Answer does not address the arguments specifically set forth in the Appeal Brief regarding the deficiencies of Williams. As such, the Examiner has failed to establish a proper rejection of the claims based on

Williams. Appellant requests that the Board reverse the claim rejections that are based on Williams.

**Examiner's Arguments Regarding Combination Of Hashimoto With Vankov Or Williams**

In addressing the Appellant's argument as to why there was no motivation to combine Hashimoto with Vankov or Williams, the Examiner only presents arguments regarding Vankov and Hashimoto. The Examiner's Answer does not provide any position by the Examiner addressing Appellant's express arguments in the Appeal Brief as to the deficiency in the combination of Hashimoto and Williams. Accordingly, the Board should take Appellant's arguments as being un rebutted and, thus, conclusive on the inappropriateness of the combination of Hashimoto and Williams.

Turning to the combination of Hashimoto and Vankov, the Examiner presents the following arguments in the Examiner's Answer (i) it was within the skill of a person of ordinary skill in the art to use the surface finishing process of Hashimoto to make the blade of Vankov since Hashimoto produces a smooth finish; and (ii) Appellant has not identified a difference between the claimed surface finishing apparatus in the instant application and the surface finishing apparatus of Hashimoto. Both these arguments fail to support the rejections.

As set forth in the Appeal Brief, nothing in Hashimoto's disclosure indicates an awareness of the ability, much less the desirability, of imparting a reduction in residual tensile stress to the material being processed. More importantly, the mention by Hashimoto of "centrifugal processes" as one type of the vibratory surface finishing process in the same class of "conventional surface finishing processes" as "barreling, tumbling, rotating, agitating, spinning, [and] shaking" (Hashimoto, col. 4, lines 16-18) strongly indicates that Hashimoto does not contemplate the "high speed precision polishing process used in the present invention" (U.S. Pat. Pub. No. 2002/0078813 A1, para. 44). The surface finishing process of the present invention is not a "conventional surface finishing process" and differs in character from the other processes listed in the same sentence by Hashimoto. As expressly stated in the claims, the centrifugal process requires an inner vessel, in which the saw blade and the abrasive media are placed, and an outer vessel. The inner vessel is rotated relative to the outer vessel at high speed to induce the surface finishing. These features are all expressly recited in the independent claims. These

features do not describe a conventional centrifugal process as recited in Hashimoto. Since Hashimoto provides no specific discussion of the centrifugal process used, the only conclusion that can be drawn is that the apparatus referred to by Hashimoto is one in which a drum is rotated about its own axis. Nothing else can be permissibly read from the disclosure of Hashimoto.

The scope of Hashimoto's disclosure covers vibratory finishing processes whereby "the abrading elements or media come into contact with exterior surfaces of the work pieces, thereby effectively displacing portions of the workpiece material from the exterior surface" (Hashimoto, col. 5, lines 27-30). There are no details provided at all as to use of a centrifugal process in Hashimoto. The entire disclosure is directed to the vibrational/shaking processing which shears off material, thereby inducing tensile stresses in the part. In contrast, the process of the present invention causes impingement of the abrasive elements against the exterior surface of the part similar to shot peening the part and sufficient to produce a universal compression of the surface of the metal. (See, page 10 of the present application.)

Therefore, the process of Hashimoto and of the present invention are not the same, nor are they equivalent in either manner or result. Hashimoto teaches the removal of material from the exterior surface alone, whereas the present invention teaches introduction of compressive (reduction of tensile) stresses into the finished part.

Thus, the Examiner starts with the incorrect premise that the processes are the same. Further undermining the Examiner's rejection is the fact that, as pointed out explicitly in the Appeal Brief, there is nothing to establish that the use of the Hashimoto process to make the blade in Vankov would even work. On the contrary, there is a strong suggestion that it would not work.

Specifically, the surface finishing process of Vankov requires masking off one surface of the product "with adhesive tape" or similar means (col. 6, lines 6-7 and 45-46) prior to subjecting the part to electropolishing. Vankov details the particular advantages of using electropolishing for finishing the exposed surfaces (col. 5, line 63 through col. 6, line 14), and specifically touts the simplicity of this process over "elaborate mechanical polishing processes using polishing wheels" (col. 5, lines 6-7). Vankov makes no intimation that any other polishing process could be used to effect the desired result, and instead focuses on the advantages of the electropolishing method chosen. Further, this statement in Vankov shows a clear intention to not use a

mechanical finishing process like that of Hashimoto. Thus, Vankov teaches away from the combination presented by the Examiner. A teaching away set forth in the key reference is clear evidence that a person of ordinary skill in the art would not be motivated to make the combination set forth by the Examiner. For this reason alone, the rejection should be withdrawn.

There is also no evidence that the process of Hashimoto would sharpen the cutting edges of Vankov's blade at the juncture between the masked and unmasked surfaces (col. 6, lines 8-17) to achieve the same result as electropolishing. It is unlikely that the adhesive tape used to mask one surface of the blade would stand up to the abrasive finishing media to which it would be exposed under the Hashimoto process. As such, it is impossible to predict the effect of the Hashimoto process on the masked surface and on the edge at the juncture between the masked and unmasked surfaces. It is likely that the Hashimoto process, when applied to Vankov's blade, would round the edges of the blade rather than sharpening them. Therefore, there is no expectation that the Hashimoto process could successfully be applied as a substitute for electropolishing to produce Vankov's product.

Without an expectation that the substitution would work, a person of ordinary skill in the art would not be motivated to use the Hashimoto process to make the Vankov product. Thus, this is a further reason why the combination as presented by the Examiner is improper.

The process disclosed in Hashimoto is directed towards finishing exterior surfaces of a workpiece. The result of this process is to remove directional surface textures and surface irregularities, as well as to obtain an isotropic surface. Additionally, Hashimoto cautions that exposure to a vibratory finishing process for "too long" can result in a degraded profile of the working surface (col. 2, lines 38-40). There is no evidence that Hashimoto regards the vibratory finishing processes as substitutable or in any way equivalent to an electropolishing process, and indeed Hashimoto never mentions electropolishing.

### **Examiner Has Not Contested The Inappropriateness Of The Gakhar Reference**

The Examiner's Answer does not provide any position by the Examiner addressing Appellant's express arguments in the Appeal Brief as to the deficiency in the combination of Gakhar with Hashimoto and Vankov or Williams. The Appeal Brief notes that Gakhar cannot be combined with the Vankov-Hashimoto or Williams-Hashimoto reference combinations because

Gakhar relates to a completely different field of use and addition of the Gakhar elements would render the Vankov and Williams blades inapt for their desired purposes. The Vankov and Williams blades do not need the circular configuration and anti-kickback portions of Gakhar and there would be no suggestion or motivation to make either of these combinations. Additionally, the low friction surface of Gakhar is a coating on the blade and not a polished surface of the blade material itself. Since the Examiner failed to address these arguments in the Examiner's Answer, the Board should take Appellant's arguments as being unrebutted and, thus, conclusive on the inappropriateness of the combination of Gakhar with Hashimoto, Vankov and Williams.

Based on the foregoing, Applicant respectfully request that the Board reverse the Examiner's rejection of claims 1-6, 13-18 under 35 U.S.C. 103 over Vankov in view of Hashimoto alone or in combination with Gakhar.

Although the Examiner has not addressed the Appellant's arguments in the Appeal Brief regarding the combination of Williams and Hashimoto, it is respectfully submitted that the deficiencies noted above with regard to the combination of Hashimoto and Vankov apply equally to the combination of Hashimoto and Williams. Accordingly, Appellant continues to request that the Board reverse the Examiner's rejection of claims 1-6, 13-18 under 35 U.S.C. 103 over Williams in view of Hashimoto alone or in combination with Gakhar.

It is noted that claim 19 has only been rejected under §102 in the Examiner's Answer. There is no §103 rejection set forth in the Examiner's Answer, nor does the Examiner raise any arguments indicating that the claim is rejected under §103. Hence, in the event that the §102 rejection of claim 19 is reversed by the Board, Appellant requests that claim 19 be indicated as allowed.

#### **4. CONCLUSION**

Applicant respectfully submits that the Examiner erred in rejecting claims 1-6 and 13-19 under 35 U.S.C. 102 and 35 U.S.C. 103. Neither Vankov nor Williams anticipates every element of the present invention, as is required for a §102 rejection. Because the product of the present invention has been shown to be structurally different from the products of both Vankov and

Williams, rejection of the product-by-process claims of the present invention as anticipated is improper.

Further, as set forth above, Hashimoto cannot be combined with either Vankov or Williams under §103 to provide the missing elements or structural features since Hashimoto does not disclose a process which imparts residual tensile stress as the process of the present invention. Second, even if Hashimoto did disclose such a process, there is no suggestion or motivation in either direction to combine Vankov or Williams with Hashimoto. The Hashimoto process applied to Vankov's blade would render it inoperable for its desired use. Any residual stress benefits imparted by the Hashimoto process to a blank used in the Williams process would be negated by the subsequent grinding steps, and the Hashimoto process applied to Williams' finished blade would impact negatively on the coating applied by Williams.

Applicant requests that the Board reverse the Examiner's rejection of claims 1-6 and 13-19 in the instant application.

Respectfully submitted,

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